

Wireless Data Radio Modem

(RS232 Output/485 Output)

434MHz 5W Multi-point Transceiver

Model: RD-232HI-4M5W



Version History

Version	Date	Changes
V1.00	Mar.22, 2013	1 st . Edition

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Important Event

- This product is in general use for the equipment on the premise of the development, design, manufacture. Do not use that require high security purposes, such as machinery or medical, aviation equipment, machinery and transport-related deaths are directly or indirectly related to the system.
- This product should be in this brochure by the instructions of the types and rated voltage power under the current proper use. If violation of this statement by the safety records of the supply operation, I am afraid our company cannot afford any of the responsibility.
- Do not self-decomposition, alteration, repair of the products also will cause fire, electric shock, fault, and dangerous. In addition, their decomposition, alteration, and repair the product, failure is not within the scope of warranty.
- The products are not waterproof, so please do not use and touch water. Take off and on also please note. Rain, spray, drinks, steam, sweat may be a failure.
- Use of this product, please be sure to use according to the statement recorded by the use of methods to operate. Please do not violate particular attention to the matter reminded to use.
- Please respect this statement recorded by the note. When consumers in contravention of this statement recorded note of the operation, I am afraid our company could not shoulder any responsibility.
- Products are defective, the Company will be responsible for free to amend the flaws, or to the same flawless product or its equivalent products in exchange. However, the Company does not assume based on the requirements of the flaw and loss responsibility.
- The Company reserves the right to retain without notice to users of the cases, the product of hardware / software (version upgrade) is with the right to edit.

Declaration

This product provides different frequency for user selection to meet different telecommunication regulation and FCC/CE on different countries.

Warranty

The warranty time is within one year from purchased date. The warranty scope are used in normal situation and none vandalism. (Some function harmful out of warranty scope and Vandalism are Un-warranty).

Un-warranty Scope Description

- Because the natural disaster, accident or human factor to cause the bad damage.
- Violate the product instruction manual to cause the damage of the products.
- The improper assemble causes damage.
- The products used the unsanctioned accessory to cause damaged.
- Overstep the allowed used environment to cause the products damaged.

Contact Us

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Key Feature

- 434MHz
- UHF Band Wireless Data Transceiver
- RF Output Power up to 5W
- Sensitivity up to -126dBm (2Kbps)
- RS232 、RS485 Interface
- Transceiver Data Rate 1.8Kbps~172.8Kbps

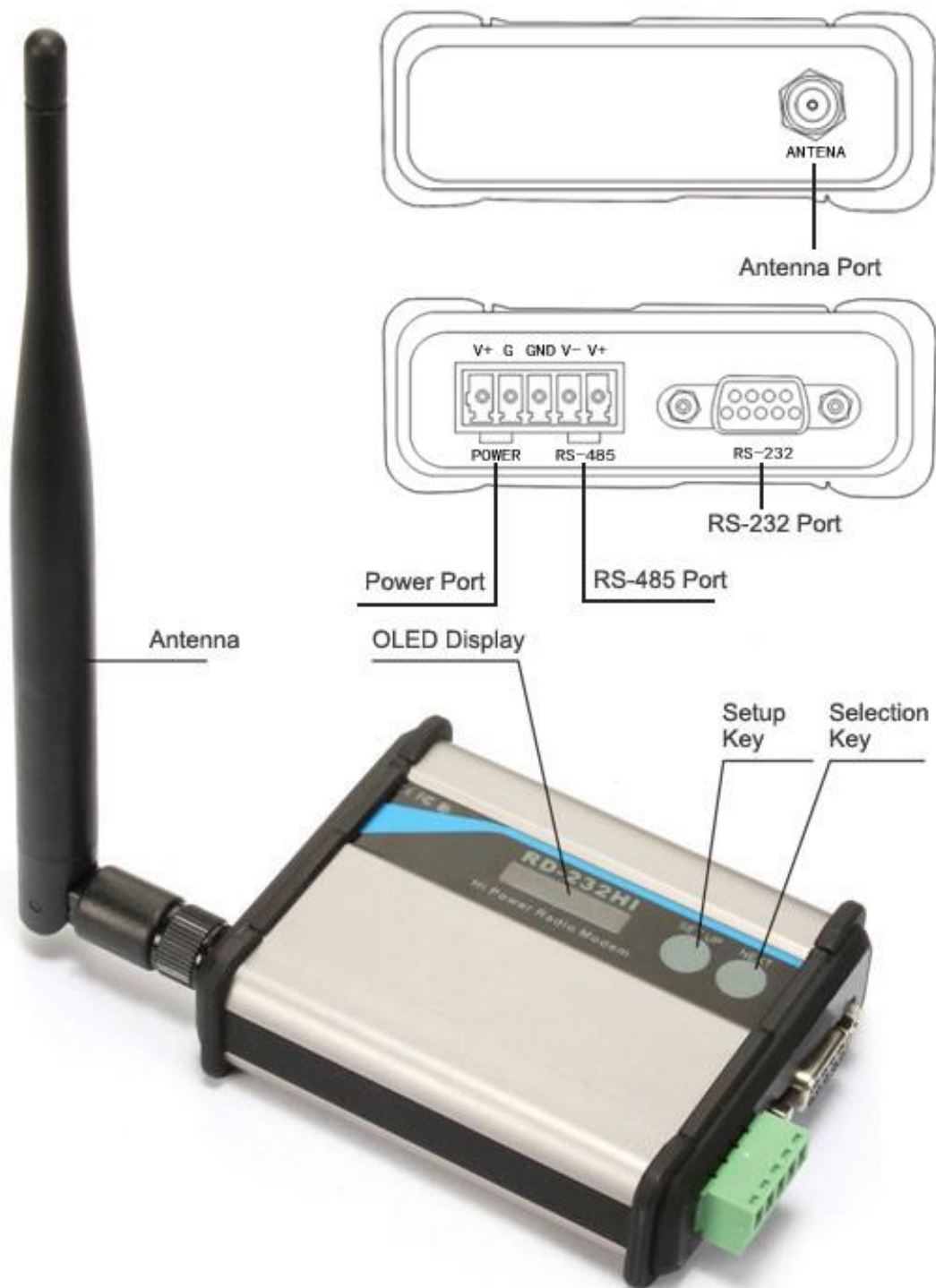
Application

- Wireless Network
- Multi-Channel Home Automation Standard
- Wireless RS232
- Active RFID Base Station Transceiver

Characteristic

Parameter	Min	Type	Max	Unit	Condition
Operating Condition					
Operating Temperature Range	-10		+70	℃	
Operating Supply Voltage	9	12	18	V	
Current Consumption					
RX Mode		45		mA	DC 12V
TX Mode (5W)		1.8		A	Peak
RF Characteristic					
Frequency Range	432	434	436	MHz	
Data Rate	1.8		172.8	Kbps	GFSK
TX Output Power		37	37.8	dBm	
RX Sensitivity		-126	-124	dBm	
Modulation		GFSK			
Other					
ESD			2000	V	
Interface Data Rate	1.2		115.2	Kbps	

View



General Operation

Stand-by Installation Mode

- **Set up key**

1. Press set up key shortly to view the internal parameters. It will return to stand-by mode automatically if there is no further set-up procedures done in 3 seconds.
2. Press set up key for more than 3 seconds to enter set-up mode.
3. Press set up key one-time shortly to exit RSSI monitoring mode.

- **Next key**

1. Press next key shortly to examine the present RSSI value. It will return to stand-by mode automatically if there is no further set-up procedures done in 3 seconds.
2. Press next key for more than 3 seconds to enter RSSI monitoring mode. This mode sees RSSI as the priority mode, there will be incomplete reception when receiving data at this mode.

Set up Installation Mode

- **Set up key**

1. Press set up key shortly to switch desired adjustment modes.
2. Press set up key for more than 3 seconds to enter next menu item.

- **Next key**

1. Press next key button to modify the parameters on marked item.
2. Press next key for more than 3 seconds to save current settings and exit set-up mode.

Menu Items

- **Connect Port Set-up**

1. Baud rate : Default 9600bps , Range 1200~115200bps
2. Port set : Default 8,1,0

- **GID Set-up**

Default 0000, Range 0000~FFFF

- **SID Set-up**

Default 00, Range 00~FE

- **RF rate**

Default 57.6K, Range 1.8K~172.8K

- **Frequency**

Default 433.000M, Range 432.000M~436.000M

- **TX Power**

Default 37dBm, Range 27~37dBm

- **Mode**

Default Mode1, Range 1~4

- **Default Value**

Yes : Restore to default settings NO : Return to Menu

Modifying internal parameters through RS-485 or RS-232 interface

Transmit value = 0x01+0x02+...+7E+0x7F, altogether 127 bytes

- ✧ It is only allowed at set-up mode to read or modify all parameters.

Transmit value=0xFF FF FF 55 CC

- ✧ It is only allowed to exit set-up mode to transmit or receive data.

Transmit value=0xFF FF FF 55 AA BB FD

✧ There will be altogether 11 bytes, the former 6 character stands for name, while the latter 4 characters stands for firmware version.

Transmit value=0xFF FF FF 55 AA BB FF

- ✧ It is to delete previous setting parameters in order to return to default values.

Transmit value=0xFF FF FF 55 AA BB FE

Receive value=0x03 00 00 00 00 05 **06 9B 68** 07 00 00 FF FF FF FF FF FF FF FF
FF FF FF FF FF FF FF FF FF FF (This is original default value)

- ✧ There will be altogether 31 bytes, showing the current internal parameters.

Transit value=0xFE 03 00 00 00 00 05 **06 9B 68** 07 00 00 FF FF FF FF FF FF FF
FF FF FF FF FF FF FF FF FF FF FF FF , altogether transmitting 32 Bytes

Receive value=0xFD 03 00 00 00 00 05 **06 9B 68** 07 00 00 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF , altogether receiving 32 Bytes. The first byte shows FD standing for completed the setting; while it shows FE standing for the same value as internal parameter.

- ✧ There are altogether 31 bytes allowing the modification of all parameters.

- ✧ 1st byte: The starting character, fixed value=0xFE

- ❖ 2nd byte: checksum, stop bits, interface speed rate, set up ranged 00 ~ 07; the default rate: 9600bps

Bit 7: 0~ 8bits format (8,1,N/7,1,O/7,1,E/7,2,N)

1~9 bit format (8,1,O/8,1,E/8,1,S/8,2,N(8,1,M)

Remark: N/O/E/M/S stands for None check (None), Odd parity check (Odd), Even parity check (Even), 1 check (Mark) and 0 check (Space)

Bit6~5 : 00 None check/1 check (Mark)

01 Odd parity check

10 Even parity check

11 0 check (Space)

Bit 4~3: fixed as 0

Bit2 ~0: interface rate

<http://www.wenshing.com.tw>; <http://www.rf.net.tw>

Rate(bps)	1200	2400	4800	9600	19.2K	38.4K	57.6K	115.2K
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- ✧ 3rd ~ 4th Byte: group ID (GID), set-up range: 0000~FFFF
- ✧ 5th Byte: Equipment ID (SID), set-up range: 00~FE
- ✧ 6th Byte: invalid character, fixed as 0x00
- ✧ 7th Byte: transmitting rate range: 00 ~ 07. Generally, the RF transmitting rate should be greater than interface rate to avoid data error.

Value	0	1	2	3	4	5	6	7
Rate(bps)	1800	3600	7200	14.4K	28.8K	57.6K	84K	172.8K

✧ 8th ~ 10th Byte: Working frequency calculation:

MHz*1000=KHz and then transfer to Hexadecimal System.

Example:

When it is at 434MHz working frequency, 433*1000=433000=0x06 9B 68, then to fill in 06 at 8th Byte, fill in 9B at 9th Byte, fill in 68 at 10th Byte. When it is at 434MHz working frequency, 434*1000=434000=0x06 9F 50 then to fill in 06 at 8th Byte, fill in 9F at 9th Byte, fill in 50 at 10th Byte.

- ✧ 11th Byte:

Bit0~Bit2: output power range: 0 ~ 7

Output Power		
dBm	Set Value	Hex (Bit0~Bit2)
27	0	000
29	1	001
30	2	010
32	3	011
33	4	100
35	5	101
36	6	110
37	7	111

Bit3 ~Bit5: Invalid character, fixed as 000.

Bit6~Bit7: Device working in 4 modes as stating below:

- **Mode 1 (Long-figure data mode: setup value 00)**

In this mode, all devices with same GID value can receive data. It can employ in the situation where data capacity greater than 127Bytes.

- **Mode 2 (ID data mode 1: setup value 01)**

In this mode, all devices with the same GID value could transmit signal to specified SID to achieve one-to-multiple-transmission, but the single data should not exceed 127Bytes.

Example:

SID value is 55 from device A, SID value is 88 from device B and both of them have the same GID. During mode 2, device A is going to transmit a 5-byte data 0x1234567890 to B so A sends a 6-byte data 0x881234567890, and then B receives a 6-byte data 0x551234567890, where the first byte stands for SID of A.

- **Mode 3 (ID data mode 2: setup value 10)**

In this mode, it is allowed to transmit data to specified GID and SID device, in order to achieve one-to-multiple-transmission, but the single data including specified GID and SID should not exceed 127Bytes.

Way of transmission:

The data will be transmitted through the order of 13th byte to 32nd byte.

Example:

Device A shows GID=AAA, SID=55, device B shows GID=BBBB, SID=88, device C shows GID=CCCC, SID=99.

Device A is going to transmit a 5-byte data 0x1234567890 to B so A sends a 10-byte data 0x04FFBBBB881234567890, and then B receives a 5-byte data 0x1234567890.

Device A is going to transmit a 5-byte data 0x1234567890 to device C through device B, then device A sends a 14-byte data 0x08FFBBBB88FFCCCC991234567890, while device B will not receive anything, and then device C receives a 5-byte data 0x1234567890.

- **Mode 4 (saved ID data mode: setup value 11)**

During this mode it is allowed to pre-save the path of specified GID and SID. When sending signals the system will automatically follow the pre-saved value to transmit, it is up to 14 times of transmission and single data of pre-saved GID and SID should no greater than 127 Bytes.

✧ 12th Byte: Invalid character, fixed as 0X00

✧ 13th to 32nd Byte: Pre-saved path, it only

activates in mode 4 (saved ID data mode).

✧ 13th Byte: It stands for the valid data among 14~32 bytes.

✧ 14th ~32nd Bytes format of path:

- ◆ Example 1: 04 FF 12 34 55 11 22 33 44~00

The 13th Byte shows the valid data is 4-Byte FF 12 34 55

FF 12 34 55, it stands for GID=1234, SID=55. This device will receive data from UR and automatically sends to device with GID=1234 and SID=55.

- ◆ Example 2: 05 FF 12 34 55 11 22 33 44~00

The 13th Byte shows the valid data is 5-Byte FF 12 34 55 11

FF 12 34 55 11, it stands for GID=1234, SID=55 and 11. This device will receive data from UR and automatically sends to The device with GID=1234 and SID=11.

- ◆ Example 3: 06 FF 12 34 55 11 22 33 44~00

The 13th Byte shows the valid data is 6-Byte FF 12 34 55 11 22

FF 12 34 55 11 22, it stands for GID=1234, SID=55, 11 and 22. This device will receive data from UR and automatically sends to The device with GID=1234 and SID=55 and transferring to the device with GID=1234, SID=22.

- ◆ Example 4: 08 FF 12 34 55 FF 45 67 88 44~00

The 13th Byte shows the valid data is 8-Byte FF 12 34 55 FF 45 67 88, it stands for GID=1234, SID=55, GID=4567 and SID=88. This device will receive data from UR and automatically sends to device with GID=1234 and SID=55 and transferring to the device with GID=4567 and SID=88.

CE Caution Note (European Union)

Symbol of  it accords with EMC regulation (89/336 / EEC) to represent this device, and the low-voltage regulation of European Union (73/23/EEC). It represents to follow the following standard regulations of European Union (The bracket is a reciprocal international standard reciprocal international standard and regulation).

- EN 60950/A11: 1997/(IEC 60950/A4: 1996), The ones that includes information science and technology of apparatus of e-commerce safe.
- EN 55024: 1998 (IEC 1000-4-2, 1000-4-3, 1000-4-4, 1000-4-5, 1000-4-6, 1000-4-8, 1000-4-11) - ' scientific and technological apparatus of information - The characteristic of interfere avoided - Restrain and test method '
- Chapter 2 -Static release (ESD) Demand
- Chapter 3 -Radiate the static field demand
- Chapter 4 -The electron is transmitted / produced and washed (EFT) fast Demand.
- Chapter 5 -surge demand
- Chapter 6 -Resistance demand caused in field of wireless frequency.
- Chapter 8 -Magnetic field demand of electric frequency.
- Chapter 11 -Shortly cut off the demand of making a variation with the voltage transiently under the voltage.

EN 55022:1998/(CISPR 22:1997) ,Class B, ' "To assess information scientific and technological apparatus wireless restriction and way of interfering with the characteristic."

FCC Consistent Declaration (U.S.A. Only)

Attention: FCC rule regulation, modified and changed must allowed by WENSHING Electronics company, otherwise that would make you operate this apparatus invalid. This apparatus adopted test, according to chapter 15 that FCC regulation, accord with Class B digital restrictions of device. These limits are designed to provide reasonable protection, avoid to having harmful interference at home's environment.

This device may have radiated wireless frequency energy. If don't allow the instruction manual, then may will interfere wireless communication. However, there is no any way to guarantee, it will not be interfered in particular installed. If this device really causes harmful interference, (It could be confirmed by turning on or off this device.) Advise you to try to use the following ways modifying the interference situation.

- Relocation receiving antenna or altering its direction.
- Increase the distance between device and receiver.
- Please connect this device to the outlet in the circuit different from the receiver.
- The following manuals is published by Federal Communications Commission, they must be helpful to all users.
- How to Identify and Resolve Radio-TV Interference Problems. (This manual can be obtained by relevant departments of publication of the U.S. government.)
- Government Printing Office, Washington D.C., 20402. Stock No. 004-00398-5